TEST REPORT

FCC PART 15 SUBPART C CERTIFICATION REPORT

FOR LOW POWER TRANSMITTER

TEST REPORT No.: HM110077

Equipment Under Test [EUT]:	RF Wireless Joystick
Model Number:	PS21A0MIE3
Applicant:	Maxwise Production Enterprise Limited.
FCC ID :	Q2VIAOMIE3

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CONCLUSION

The submitted product was deemed to have COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

Verified by

Patrick Wong
for Chief Executive

1.0 General Details

1.1 Test Laboratory

The Hong Kong Standards and Testing Centre Ltd.
EMC Laboratory
10 Dai Wang Street, Taipo Industrial Estate
New Territories, Hong Kong

1.2 Applicant Details

Applicant

MAXWISE PRODUCTION ENTERPRISE LIMITED.
Room 1501, 15/F., AT Tower, 180 Electric Road,
North Point, Hong Kong.

HKSTC Code Number for Applicant **MAP008**

Manufacturer

MAXWISE MANUFACTURING LTD.
Unit 2610, China Merchants Tower Shun Tak Ctr.,
168-200 Connaught Rd C, Hong Kong.

1.3 Equipment Under Test [EUT]

Description of Sample

Product:	RF Wireless Joystick
Manufacturer:	Maxwise Manufacturing Ltd.
Brand Name:	MAXWISE
Model Number:	PS21A0MIE3
Input Voltage:	6Vd.c. ("AAA" size battery x 4) with DC jack The AC/DC Adapter used for the tests was a "Winstar" adapter: Model Number: NA-1535, Input: 117/230Va.c. 50/60Hz 34W, Output: 3-15Vd.c. 1500mA max.
Additional Model Number:	GC01A0MAE3

1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is an Maxwise Production Enterprise Ltd.., RF Wireless Joystick. The transmitter is a 2 button transmitter. The EUT continues to transmit while button is being pressed, Modulation by IC. and tape is pulse modulation.

1.4 Date of Order

2003-03-21

1.5 Submitted Sample(s):

2 Sample per model

1.6 Test Duration

2003-04-08

1.7 Country of Origin

China

1.8 Additional Information of EUT

	Submitted	Not Available
User Manual	☒	☐
Part List	☒	☐
Circuit Diagram	☒	☐
Printed Circuit Board [PCB] Layout	☒	☐
Block diagram	☒	☐
FCC ID Label	☒	☐

2.0 Technical Details

2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 and ANSI C63.4:2000 for FCC Certification.

2.2 Test Standards and Results Summary Tables

EMISSION
Results Summary

Test Condition	Test Requirement	Test Method	Class / Severity	Test Result		
				Pass	Failed	N/A
Field Strength of Fundamental Emissions & Spurious Emissions	FCC 47CFR 15.249	ANSI C63.4:2000	N/A	☒	☐	☐
Radiated Emissions, 30MHz to 1GHz	FCC 47CFR 15.109	ANSI C63.4:2000	Class B	☒	☐	☐
Conducted Emissions on AC, 0.15MHz to 30MHz	FCC 47CFR 15.207	ANSI C63.4:2000	Class B	☒	☐	☐

Note: N/A - Not Applicable

3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions

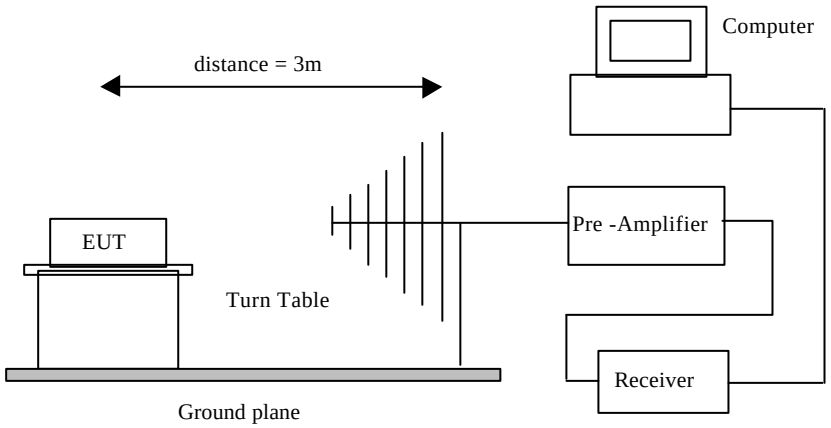
Test Requirement:	FCC 47CFR 15.249
Test Method:	ANSI C63.4:2000
Test Date:	2003-04-08
Mode of Operation:	On mode

Test Method:

The sample was placed 0.8m above the ground plane on the OATS *. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigate all operating modes, rotated about all 3 axis (X, Y & Z) to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

*: OATS [Open Area Test Site] located at HKSTC with a metal ground plane on filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 90657.

Test Setup:



Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [Millivolts/meter]	Field Strength of Fundamental Emission [microvolts/meter]
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500
24000-22500	250	2500

** Linear interpolations

Results: DIP Switch 0000

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
903.10	47.5	29.8	77.3	7328.2	50,000	Vertical
1806.20	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2709.30					50,000	Vertical
3612.40					50,000	Vertical
4515.50					50,000	Vertical
5418.60					50,000	Vertical
6321.70					50,000	Vertical
7224.80					50,000	Vertical
8127.90					50,000	Vertical
9031.00					50,000	Vertical

Results: DIP Switch 0001

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
909.50	45.4	29.8	75.2	5754.4	50,000	Vertical
1819.00	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2728.50					50,000	Vertical
3638.00					50,000	Vertical
4547.50					50,000	Vertical
5457.00					50,000	Vertical
6366.50					50,000	Vertical
7276.00					50,000	Vertical
8185.50					50,000	Vertical
9095.00					50,000	Vertical

Results: DIP Switch 0010

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
916.60	46.9	29.8	76.7	6839.1	50,000	Vertical
1833.20	No Emission Detected Within 20dB of the FCC Limit				500	Vertical
2749.80					50,000	Vertical
3666.40					50,000	Vertical
4583.00					50,000	Vertical
5499.60					50,000	Vertical
6416.20					50,000	Vertical
7332.80					50,000	Vertical
8249.40					50,000	Vertical
9166.00					50,000	Vertical

Results: DIP Switch 0011

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
916.60	47.0	29.8	76.8	6918.3	50,000	Vertical
1833.20	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2749.80					50,000	Vertical
3666.40					50,000	Vertical
4583.00					50,000	Vertical
5499.60					50,000	Vertical
6416.20					50,000	Vertical
7332.80					50,000	Vertical
8249.40					50,000	Vertical
9166.00					50,000	Vertical

Results: DIP Switch 0100

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
903.10	47.4	29.8	77.2	7244.4	50,000	Vertical
1806.20	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2709.30					50,000	Vertical
3612.40					50,000	Vertical
4515.50					50,000	Vertical
5418.60					50,000	Vertical
6321.70					50,000	Vertical
7224.80					50,000	Vertical
8127.90					50,000	Vertical
9031.00					50,000	Vertical

Results: DIP Switch 0101

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
909.50	46.1	29.8	75.9	6237.3	50,000	Vertical
1819.00	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2728.50					50,000	Vertical
3638.00					50,000	Vertical
4547.50					50,000	Vertical
5457.00					50,000	Vertical
6366.50					50,000	Vertical
7276.00					50,000	Vertical
8185.50					50,000	Vertical
9095.00					50,000	Vertical

Results: DIP Switch 0110

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
916.60	47.3	29.8	77.1	7161.4	50,000	Vertical
1833.20	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2749.80					50,000	Vertical
3666.40					50,000	Vertical
4583.00					50,000	Vertical
5499.60					50,000	Vertical
6416.20					50,000	Vertical
7332.80					50,000	Vertical
8249.40					50,000	Vertical
9166.00					50,000	Vertical

Results: DIP Switch 0111

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
916.60	7.0	29.8	36.8	69.2	50,000	Vertical
1833.20	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2749.80					50,000	Vertical
3666.40					50,000	Vertical
4583.00					50,000	Vertical
5499.60					50,000	Vertical
6416.20					50,000	Vertical
7332.80					50,000	Vertical
8249.40					50,000	Vertical
9166.00					50,000	Vertical

Results: DIP Switch 1000

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
906.00	47.1	29.8	76.9	6998.4	50,000	Vertical
1812.00	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2718.00					50,000	Vertical
3624.00					50,000	Vertical
4530.00					50,000	Vertical
5436.00					50,000	Vertical
6342.00					50,000	Vertical
7248.00					50,000	Vertical
8154.00					50,000	Vertical
9060.00					50,000	Vertical

Results: DIP Switch 1001

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
913.10	46.7	29.8	76.5	6683.4	50,000	Vertical
1826.20	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2739.30					50,000	Vertical
3652.40					50,000	Vertical
4565.50					50,000	Vertical
5478.60					50,000	Vertical
6391.70					50,000	Vertical
7304.80					50,000	Vertical
8217.90					50,000	Vertical
9131.00					50,000	Vertical

Results: DIP Switch 1010

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
920.10	46.4	29.8	76.2	6456.5	50,000	Vertical
1840.20	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2760.30					50,000	Vertical
3680.40					50,000	Vertical
4600.50					50,000	Vertical
5520.60					50,000	Vertical
6440.70					50,000	Vertical
7360.80					50,000	Vertical
8280.90					50,000	Vertical
9201.00					50,000	Vertical

Results: DIP Switch 1011

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
920.10	46.9	29.8	76.7	6839.1	50,000	Vertical
1840.20	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2760.30					50,000	Vertical
3680.40					50,000	Vertical
4600.50					50,000	Vertical
5520.60					50,000	Vertical
6440.70					50,000	Vertical
7360.80					50,000	Vertical
8280.90					50,000	Vertical
9201.00					50,000	Vertical

Results: DIP Switch 1100

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
906.00	47.1	29.8	76.9	6998.4	50,000	Vertical
1812.00	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2718.00					50,000	Vertical
3624.00					50,000	Vertical
4530.00					50,000	Vertical
5436.00					50,000	Vertical
6342.00					50,000	Vertical
7248.00					50,000	Vertical
8154.00					50,000	Vertical
9060.00					50,000	Vertical

Results: DIP Switch 1101

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
913.10	46.5	29.8	76.3	6531.3	50,000	Vertical
1826.20	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2739.30					50,000	Vertical
3652.40					50,000	Vertical
4565.50					50,000	Vertical
5478.60					50,000	Vertical
6391.70					50,000	Vertical
7304.80					50,000	Vertical
8217.90					50,000	Vertical
9131.00					50,000	Vertical

Results: DIP Switch 1110

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
920.10	47.2	29.8	77.0	7079.5	50,000	Vertical
1840.20	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2760.30					50,000	Vertical
3680.40					50,000	Vertical
4600.50					50,000	Vertical
5520.60					50,000	Vertical
6440.70					50,000	Vertical
7360.80					50,000	Vertical
8280.90					50,000	Vertical
9201.00					50,000	Vertical

Results: DIP Switch 1111

Field Strength of Fundamental Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
920.10	46.8	29.8	76.6	6760.8	50,000	Vertical
1840.20	No Emission Detected Within 20dB of the FCC Limit				50,000	Vertical
2760.30					50,000	Vertical
3680.40					50,000	Vertical
4600.50					50,000	Vertical
5520.60					50,000	Vertical
6440.70					50,000	Vertical
7360.80					50,000	Vertical
8280.90					50,000	Vertical
9201.00					50,000	Vertical

Remarks:

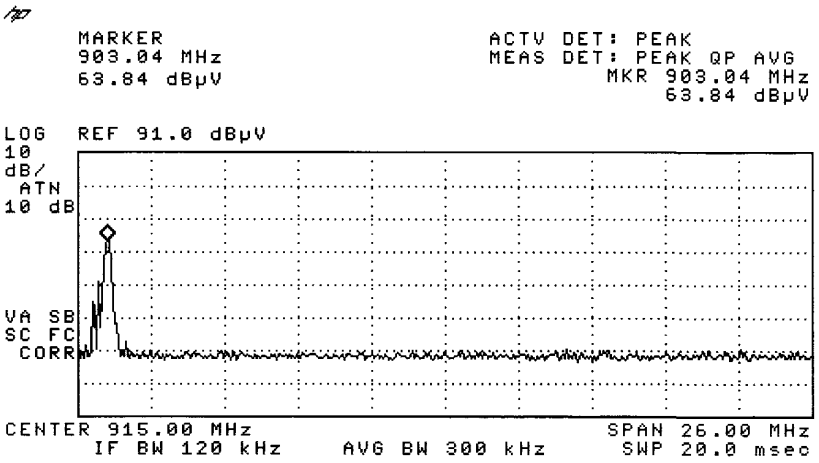
*: Linear interpolations

Correction Factor included Antenna Factor and Cable Attenuation.

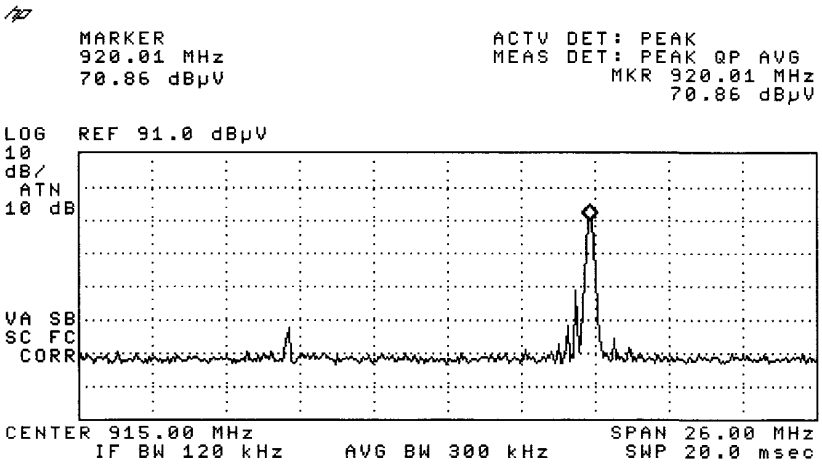
Calculated measurement uncertainty = 30MHz to 300MHz ±3.7dB
300MHz to 1GHz +3.0dB / -2.7dB

Band Edge Measurement (Section 15.249(d))

Lowest Frequency:



Highest Frequency:



Limited for Radiated Emissions [FCC 47 CFR 15.109 Class B]:

Frequency Range [MHz]	Quasi-Peak Limits [µV/m]
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results:

Radiated Emissions Quasi-Peak					
Emission Frequency MHz	Antenna Polarity	Level .@3m dBµV/m	Limit .@3m dBµV/m	Level @3m .@3m µV/m	Limit .@3m µV/m
NOEM S SIONDETECTEDW ITHIN 20dBOFTHEFCCLIM ITS					

Calculated measurement uncertainty = 30MHz to 300MHz ±3.7dB
300MHz to 1GHz +3.0dB / -2.7dB

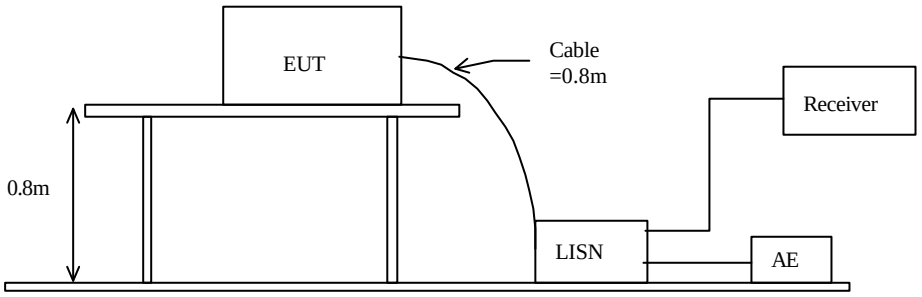
3.1.1 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement:	FCC 47CFR 15.207
Test Method:	ANSI C63.4:2000
Test Date:	2003-04-08
Mode of Operation:	On mode

Test Method:

The test was performed in accordance with ANSI C63.4:2000, with the following: an initial measurement was performed in peak and average detection mode on the live line. Any emissions recorded within 30dB of the relevant limit line were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

Test Setup:



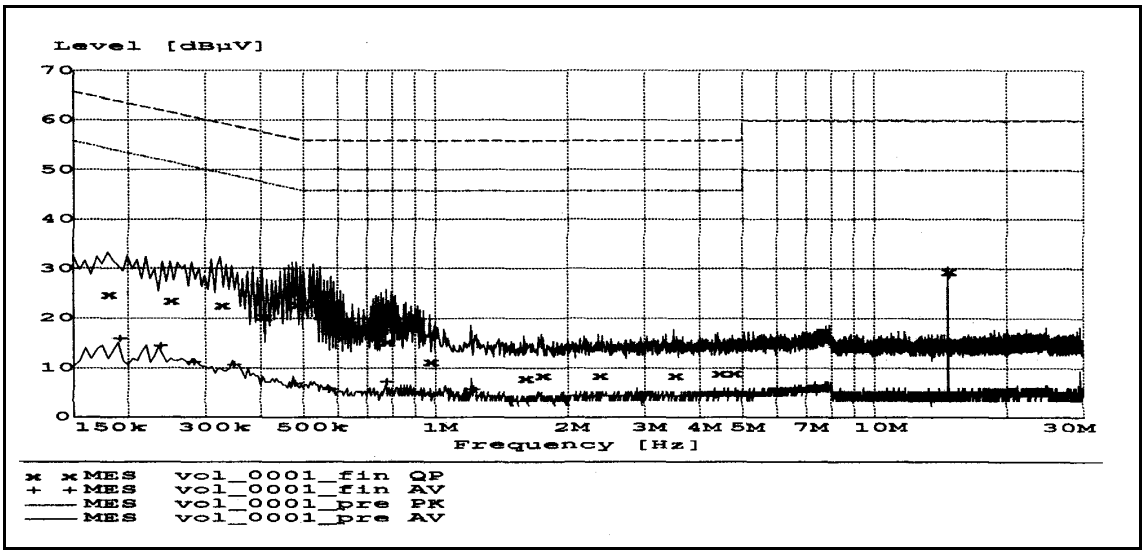
Limit for Conducted Emissions (FCC 47 CFR 15.107):

Frequency Range [MHz]	Quasi-Peak Limits [dBµV]	Average [dBµV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

* Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram labelled as (QP and AV).

Results:



Results:

Conductor Live or Neutral	Frequency MHz	Quasi-peak Level dBµV	Quasi-peak Limit dBµV	Average Level dBµV	Average Limit dBµV
Live	0.180	24.9	65.0	-*-	-*-
Live	0.190	-*-	-*-	16.1	54.0
Live	0.235	-*-	-*-	14.6	52.0
Live	0.250	23.7	62.0	-*-	-*-
Live	0.325	22.7	60.0	-*-	-*-
Live	0.345	-*-	-*-	10.8	49.0
Live	0.405	20.4	58.0	-*-	-*-
Live	0.475	-*-	-*-	7.0	46.0
Live	0.485	22.8	56.0	-*-	-*-
Live	0.770	-*-	-*-	7.3	46.0
Live	0.775	15.3	56.0	-*-	-*-
Live	1.210	-*-	-*-	5.8	46.0
Live	2.880	-*-	-*-	4.4	46.0
Live	4.415	9.0	56.0	-*-	-*-
Live	14.745	29.6	60.0	28.8	50.0
Neutral	0.280	-*-	-*-	11.3	51.0
Neutral	0.570	-*-	-*-	5.7	46.0
Neutral	0.580	17.7	56.0	-*-	-*-
Neutral	0.975	11.3	56.0	-*-	-*-
Neutral	1.600	8.0	56.0	-*-	-*-
Neutral	1.750	8.5	56.0	-*-	-*-
Neutral	2.360	8.5	56.0	-*-	-*-
Neutral	3.510	8.5	56.0	-*-	-*-
Neutral	4.345	-*-	-*-	4.6	46.0
Neutral	4.765	9.0	56.0	-*-	-*-
Neutral	4.830	-*-	-*-	4.9	46.0

Remarks:

Calculated measurement uncertainty = ±2.3dB
-*- Emission greater than 30dB below limit line.

Appendix A

Test Equipment Audit

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM007	SPECTRUM ANALYZER	HEWLETT PACKARD	HP85660B	3144A21192	14/03/03
EM008	SPECTRUM ANALYZER DISPLAY	HEWLETT PACKARD	HP85662A	3144A20514	14/03/03
EM009	QUASI PEAK ADAPTOR	HEWLETT PACKARD	HP85650A	3303A01702	14/03/03
EM010	RF PRESELECTOR	HEWLETT PACKARD	HP85685A	3221A01410	14/03/03
EM011	ATTENNUATOR/SWITCH	HEWLETT PACKARD	HP11713A	2508A10595	14/03/03
EM012	PRE-AMPLIFIER	HEWLETT PACKARD	HP8449B	3008A00262	14/03/03
EM013	CONTROLLER (COMPUTER), COLOR MONITOR, KEYBOARD & MOUSE FLOPPY DRIVE	HEWLETT PACKARD HEWLETT PACKARD HEWLETT PACKARD	HP9000 HP A1097C HP9133L	6226A60314 3151J39517 2623A02468	CM
EM020	HORN ANTENNA	EMCO	3115	4032	19/07/00
EM022	LOOP ANTENNA	EMCO	6502	1189-2424	04/08/00
EM072	SIGNAL GENERATOR	HEWLETT PACKARD	8640B	1948A11892	N/A
EM083	HKSTC OPEN AREA TEST SITE	HKSTC	N/A	N/A	08/11/02
EM131	PORTABLE SPECTRUM ANALYSER	HEWLETT PACKARD	8595EM	3710A00155	18/12/01
EM145	EMI TEST RECEIVER	R & S	ESCS 30	830245/021	22/07/02
EM194	BICONILOG ANTENNA	EMCO	3142B	1795	14/05/02
EM195	ANTENNA POSITIONING MAST	EMCO	2075	2368	N/A
EM196	MULTI-DEVICE CONTROLLER	EMCO	2090	1662	N/A

Conducted Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM078	VARIAC	SHANGHAI VOLTAGE	TDGC-3/0.5	N/A	CM
EM081	SMALL SCREENED ROOM	MIKO INST HK	N/A	N/A	18/10/02
EM119	LISN	R & S	ESH3-Z5	0831.5518.52	01/10/02
EM127	ISOLATION TRANSFORMER 220 TO 300	WING SUN	N/A	N/A	CM
EM142	PULES LIMITER	R & S	ESH3Z2	357.8810.52	03/07/02
EM181	EMI TEST RECEIVER	R & S	ESIB7	100072	28/11/01
EM154	SHIELDING ROOM	SIEMENA MATSUSHITA COMPONENTS	N/A	803-740-057-99A	18/10/02
EM197	LISN	EMCO	4825/2	1193	28/03/02

Remarks:

CM Corrective Maintenance
N/A Not Applicable or Not Available
TBD To Be Determined

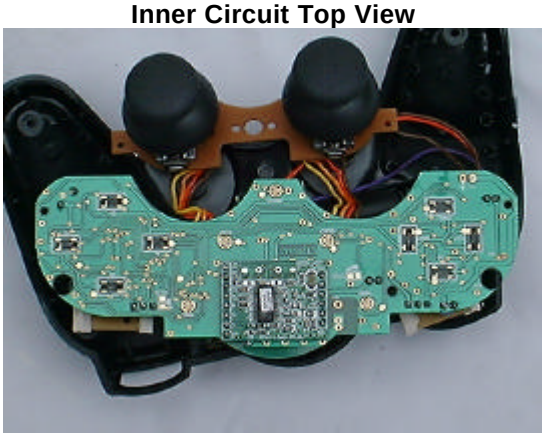
Appendix B

Photographs of EUT

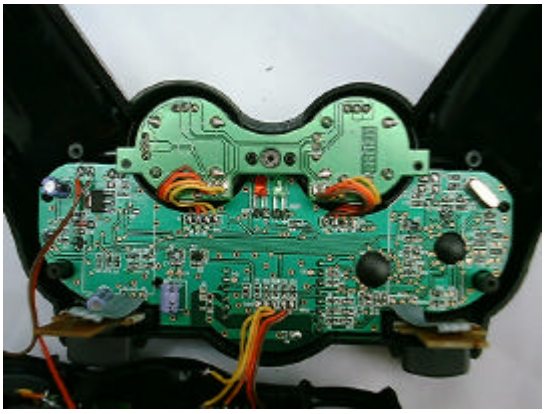
Front View of the product

Rear View of the product

Inner Circuit Top View

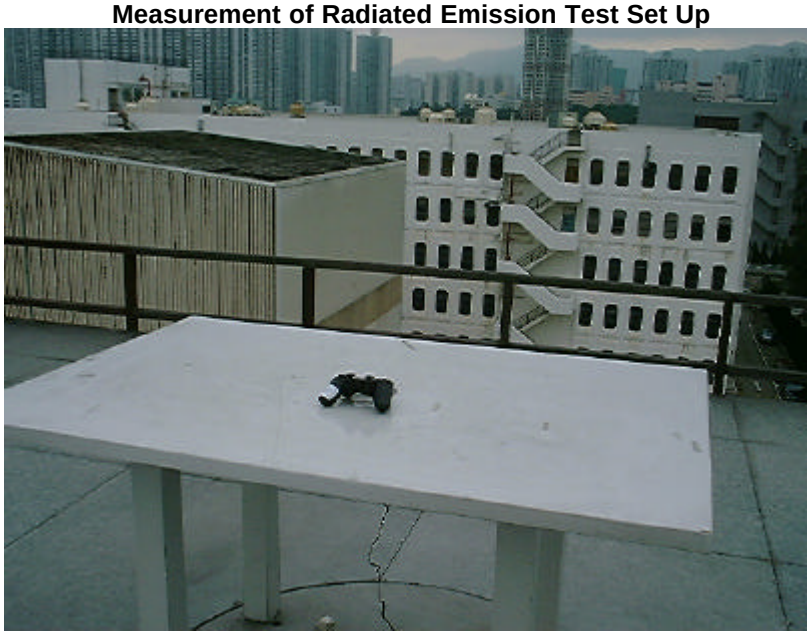


Inner Circuit Bottom View

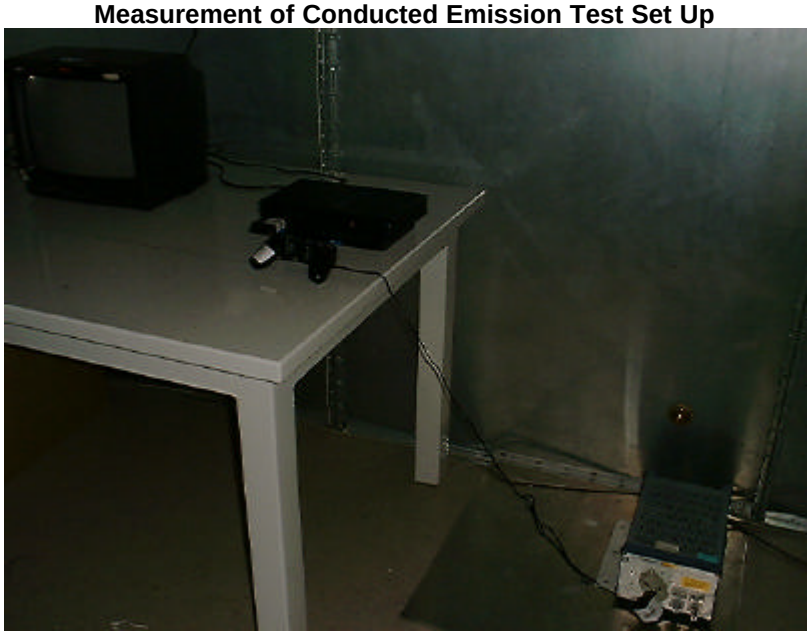


Photographs of EUT

Measurement of Radiated Emission Test Set Up



Measurement of Conducted Emission Test Set Up



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